

FACULTY OF SCIENCE

DEPARTMENT OF MATHEMATICS AND STATISTICS

MATHEMATICS AND COMPUTER SCIENCE

Bachelor of Science with Honours in Mathematics and Computer Science
Bachelor of Science in Mathematics and Computer Science
Diploma of Higher Education in Mathematics and Computer Science
Certificate of Higher Education in Mathematics and Computer Science

These regulations are to be read in conjunction with [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)

Mode of Study

1. The programmes are available by full-time study.

Curriculum

2. All students shall undertake an approved curriculum as follows:

First Year

All students shall undertake modules amounting to 130 credits as follows:

Compulsory Modules

Module Code	Module Title	Level	Credits
CS103	Machines, Languages and Computation	1	20
CS104	Information and Information Systems	1	20
CS105	Programming Foundations	1	20
MM101	Introduction to Calculus	1	20
MM102	Applications of Calculus	1	20
MM106	Essential Statistics	1	10
MM123	Geometry and Algebra	1	10
	Elective Module		10

Second Year

All students shall undertake modules amounting to 130 credits as follows:

Compulsory Modules

Module Code	Module Title	Level	Credits
CS207	Advanced Programming	2	20

CS208	Logic and Algorithms	2	20
CS209	User and Data Modelling	2	20
MM201	Linear Algebra and Differential Equations	2	20
MM202	Advanced Calculus	2	20
MM203	Applicable Analysis	2	20
	Elective Module		10

Third Year

All full-time students shall undertake modules amounting to 120 credits as follows:

Compulsory Modules

Module Code	Module Title	Level	Credits
CS308	Building Software Systems	3	20
MM301	Linear Algebra	3	20
MM302	Differential Equations	3	20

Optional Modules

60 credits chosen by Honours students from Lists A and B or another module approved by the Programme Director, including at least 20 credits from List B; and by other students from Lists A, B, and C.

List A

Module Code	Module Title	Level	Credits
MM303	Applicable Analysis 2	3	20
MM306	Numerical Analysis	3	20

List B

Module Code	Module Title	Level	Credits
CS310	Foundations of Artificial Intelligence	3	20
CS312	Web Applications Development	3	20
CS316	Functional Programming	3	20
CS317	Mobile App Development	3	20

List C

Modules listed in First and Second Year not previously taken, or further Elective Modules.

Fourth Year

All full-time students shall undertake modules amounting to 120 credits as follows:

Compulsory Class

Module Code	Module Title	Level	Credits
MM420	Mathematics and Computer Science*	4	120

*MM420 Mathematics and Computer Science comprises either MM401 Communicating Mathematics and Statistics (20 credits) or CS408 Individual Project (Computer Science) (40 credits); optional modules chosen from Lists A and B (or another module approved by the Programme Director) so that the curriculum contains no fewer than 40 credits in each subject.

List A

Module Code	Module Title	Level	Credits
MM402	Modelling and Simulation with Applications to Financial Derivatives	4	20
MM403	Applicable Analysis 3	4	20
MM404	Statistical Modelling and Analysis	4	20
MM405	Fluids and Waves	4	20
MM406	Finite Element Methods for Boundary Value Problems and Approximation	4	20
MM407	Applied Statistics in Society	4	20
MM408	Mathematical Biology and Marine Population Modelling	4	20
MM409	Mathematical Introduction to Networks	4	20
MM411	Elasticity and Complex Materials	4	20
MM412	Optimisation: Theory and Practice	4	20
MM413	Statistical Mechanics	4	20
MM414	Dynamical Models in Epidemiology	4	20
MM415	Medical Statistics	4	20

Not all optional modules on this list will be available in each academic year. Please check your programme handbook for confirmation of which optional modules will run.

List B

Module Code	Module Title	Level	Credits
CS409	Software Architecture and Design	4	20
CS410	Advanced Functional Programming	4	20
CS411	Theory of Computation	4	20
CS412	Information Mining and Access	4	20

Not all optional modules on this list will be available in each academic year. Please check your programme handbook for confirmation of which optional modules will run.

Progress

3. In order to progress to the second year of the Honours programme in addition to satisfying the requirements of the [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#), a student must also gain a pass in the following modules: MM101 Introduction to Calculus and MM102 Applications of Calculus.
4. In order to progress to the second year of the Bachelors programme, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#).
5. In order to progress to the third year of the Honours programme in addition to satisfying the requirements of the [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#), a student must also gain a pass in the following modules: MM201 Linear Algebra and Differential Equations.
6. In order to progress to the third year of the Bachelors programme, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#).
7. In order to progress to the fourth year of the programme the [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#) shall apply with at least 120 credits at Level 3.

Final Assessment and Classification

8. On successful completion of the fourth year, a candidate will be awarded 120 Level 4 credits under the module code MM420.
9. The final classification for the degree of BSc with Honours in Mathematics and Computer Science will normally be based on the first assessed attempt at compulsory and specified optional modules at Levels 3 and 4 taken in the third and fourth years.

Award

10. BSc with Honours: In order to qualify for the award of the degree of BSc with Honours in Mathematics and Computer Science, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#).

11. BSc: In order to qualify for the award of the degree of BSc in Mathematics and Computer Science, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)
12. Diploma of Higher Education: In order to qualify for the award of a Diploma of Higher Education in Mathematics and Computer Science, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)
13. Certificate of Higher Education: In order to qualify for the award of a Certificate of Higher Education in Mathematics and Computer Science, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)